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2. Applicant requests reconsideration of the above-referenced application. Upon entry of the above amendment, claims 25, 34, 35, 36, 38, 39, 44, 46, 47, 49, 52, and 53-64 remain pending in the present application.

3. Pursuant to the Office Action and the teleconference, still pending claims 38, 46 and 53 have been rejected under 35 U.S.C. §102(b) as being anticipated by Bricout ('388). Applicant respectfully requests reconsideration.

Regarding unamended Claim 53: It is alleged that, "Bricout discloses an atmospheric air intake valve 1 and a compressed air intake valve 6. Figure 2 shows that the compressed air valve 6 stays open (line 23) past BDC (line y-y) to point E which is during the compression stroke." As indicated, the compressed air valve 6 of Bricout, which opens before the upper dead center (line x-x), remains open past the bottom dead center (line y-y) into the compression stroke. However, Applicant submits that the internal combustion engine of the present invention, as claimed in claim 53, includes compressed air which is introduced into the cylinder during the compression stroke, wherein the term "introduced" conveys the well known definition, "to lead or bring in especially for the first time," which is found in *The Merriam-Webster Dictionary Home And Office Edition*, which is included as Appendix B herewith. As described at page 42 lines 14-20 of the present application, the engine of the present invention may include the following, "[a]t any point in the compression stroke of piston 22 at the time or after the piston 22 reaches point x at second inlet valve 16-A is, selectively, opened in order to inject a secondary pressurized air charge . . ." It is well settled that, "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdgal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631 2 USPQ2d 1051, 1053 (Fed. Cir. 1987) MPEP 2131. It is urged that Bricout neither teaches nor suggests the introduction of air at a second pressure initially during the compression stroke. Rather, Bricout discloses the introduction of pressurized air prior to the compression stroke, as indicated in Fig. 2. Therefore, Applicant respectfully urges that not all of the limitations of claim 53 are found in

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Bricout, thereby, precluding the anticipation of this claim by the reference under 35 U.S.C. §102(b).

Regarding amended claim 38, and claim 46 which depends therefrom - Applicant submits that every limitation of these claims are not found in Bricout. Specifically, Bricout does not disclose two intake valves wherein one occupies an open position only while the other occupies a closed position, whereas claim 38, as amended, and claim 46 do include such a limitation. Rather, the intake valves of Bricout occupy open positions simultaneously, as shown in Fig. 2. Therefore, Applicant respectfully urges that claims 38 and 46 are not anticipated by Bricout. Thus, Applicant respectfully requests withdrawal of this basis of rejection of claims 38, 46 and 53.

4. According to the Office Action, claims 25, 34, 36, 44, and 52 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Bricout in view of Miller ('934). It is alleged that,

Bricout discloses the invention substantially as claimed. However, Bricout does not disclose an intercooler for reducing the charge air temperature. Miller '934 discloses an intercooler 36 for cooling the charge air in order to increase its density. In view of this teaching, it would have been obvious to provide the engine of Bricout with an intercooler. Miller '934 also teaches control of the valve timing to optimize engine operation under varying conditions.

Applicant urges that the amendment of claims 25 and 34 herein make moot the rejection of these claims, as well as claims 36 and 52, which both depend from claim 25. More specifically, claim 25, as amended herein, includes one of the intake valves occupying an open position only while the other of the intake valves is in a closed position. The combination of Bricout and Miller does not include two intake valves wherein one is open only while the other is closed. To the contrary, the two intake valves of Bricout are both open during the intake stroke, as shown in Figure 2, while only one intake valve is disclosed by Miller, so this combination fails to teach or suggest two intake valves that are not open simultaneously. Thus, Applicant urges that claim 25, as well as dependent claims 36 and 52, are not obvious in light of the combination of Bricout and Miller.

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Regarding newly amended claim 34, Applicant urges that the combination of Bricout and Miller does not teach or suggest all of the limitations set forth in this claim. More particularly, amended claim 34 includes an intake valve that occupies an open position only during a compression stroke of the piston. To the contrary, the intake valves of the combination of Bricout and Miller are all open at some point other than during the compression stroke of the piston. For the intake valves of Bricout are both open during the intake stroke, as shown in Fig. 2, and the intake valve of Miller is also open during the intake stroke. Therefore, the combination of Bricout and Miller does not teach or suggest an intake valve that is open only during a compression stroke. Since not all of the claimed limitations of amended claim 34 are either suggested or taught by the combination of Bricout and Miller, Applicant urges that claim 34 is not made obvious by this combination. For the foregoing reasons, Applicant respectfully requests withdrawal of this basis of rejection of claims 25, 34, 36 and 52.

5. Claims 35 and 49 have been objected to as being dependent upon a rejected claim. Applicant urges that claims 35 and 49, as provided herein, are written in independent form and no longer depend from a rejected claim. No amendment has been made to these claims; they simply have been re-written in independent form. Therefore, Applicant respectfully requests withdrawal of this objection.

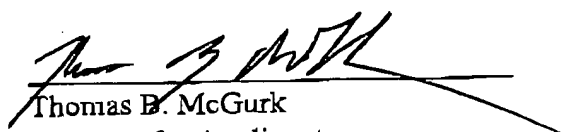
6. Finally, Applicant has submitted herewith new claims 54-64, all of which include limitations which clearly define the present invention.

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CONCLUSION

Applicant respectfully submits that the present application, as amended herein, is now in a condition for allowance. Applicant respectfully requests that the present application be allowed. However, if Examiner believes that there are unresolved issues remaining in the case, Applicant respectfully requests Examiner contact Applicant's undersigned attorney, Thomas B. McGurk.

Respectfully submitted,


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APPENDIX A

Please amend the following claims by adding the underlined sections and deleting the sections in brackets ([]):

25. (Thrice Amended) An internal combustion engine, comprising:
an engine block defining at least one cylinder therein, two cylinder inlet ports communicating between said cylinder and a source of air, and an exhaust port through which exhausted gases are expelled from said cylinder;
a piston movably mounted within said cylinder;
an intake valve selectively occluding each inlet port;
an exhaust valve selectively occluding said exhaust port;
at least one compressor in fluid communication via a conduit between said source of air and at least one cylinder inlet port;
at least one air cooler interconnected between said compressor and said inlet port;
and
means for directing low pressure air to one of said inlet ports during an intake stroke of the piston and for directing air highly compressed by said compressor to the other of said inlet ports during a compression stroke of said piston, wherein one of said intake valves occupies an open position only while the other of said intake valves occupies a closed position.
34. (Thrice Amended) In an internal combustion engine having a crankshaft driven by at least one piston moving through at least a compression stroke and an intake stroke aided by combustion taking place within a cylinder, wherein the compression stroke results in the compressing of air within the cylinder, the improvement thereto comprising:
an external compression stage in which a second air charge is compressed outside the cylinder;
delivery conduit linking said external compression stage to the cylinder, with an intercooler through which said secondary air charge is selectively directed from said external compression stage;

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two cylinder intake ports with an intake valve in each port and means for directing low pressure air to one of said intake ports during the intake stroke of the piston and for directing highly compressed air to the other of said intake ports during the compression stroke of the piston, wherein one of said intake valves occupies an open position only during a compression stroke of said piston.

Please add claims 35 and 49 to the present application as presented. Claims 35 and 49 have not been amended, but have been presented in independent form.

35. (Independent Form) [The improvement of claim 34, further comprising] In an internal combustion engine having a crankshaft driven by at least one piston moving through at least a compression stroke and an intake stroke aided by combustion taking place within a cylinder, wherein the compression stroke results in the compressing of air within the cylinder, the improvement thereto comprising:

an external compression stage in which a secondary air charge is compressed outside the cylinder;

delivery conduit linking said external compression stage to the cylinder, with an intercooler through which said secondary air charge is selectively directed from said external compression stage;

two cylinder intake ports with an intake valve in each port;

means for directing low pressure air to one of said intake ports during the intake stroke of the piston and for directing highly compressed air to the other of said intake ports during the compression stroke of the piston; and

a second external compressor in which said low pressure air charge is lightly compressed outside the cylinder and conduit directing said air charge from said second external compressor through an air cooler to a low pressure port of the cylinder during the intake stroke.

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38. (Thrice Amended) An internal combustion engine, comprising:
an engine block defining at least one cylinder therein, first and second inlet ports communicating between said cylinder and a source of air, and an exhaust port through which air is exhausted from said cylinder;
a piston movably mounted within said cylinder;
an intake valve selectively occluding each said intake port;
an exhaust valve selectively occluding said exhaust port;
means for directing air at a first pressure to said first inlet port and for directing air at a second pressure, different from said first pressure, to said second inlet port during a compression stroke of the piston, wherein one of said intake valves occupies an open position only while the other of said intake valves occupies a closed position.
49. (Independent Form) [The improvement of claim 25, further comprising] An internal combustion engine comprising:
an engine block defining at least one cylinder therein, two cylinder inlet ports communicating between said cylinder and a source of air, and an exhaust port through which exhausted gases are expelled from said cylinder;
a piston movably mounted within said cylinder;
an intake valve selectively occluding each inlet port;
an exhaust valve selectively occluding said exhaust port;
at least one compressor in fluid communication via a conduit between said source of air and at least one cylinder inlet port;
at least one air cooler interconnected between said compressor and said inlet port;
means for directing low pressure air to one of said inlet ports during an intake stroke of the piston and for directing air highly compressed by said compressor to the other of said inlet ports during a compression stroke of said piston; and
a second external compressor in which said low pressure air charge is lightly compressed outside the cylinder and conduit directing said air charge from

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said second external compressor through an air cooler to a low pressure port of the cylinder during the intake stroke.

Please add the following new claims 54-64.

54. (New) An internal combustion engine, comprising:

an engine block defining at least one cylinder therein, two cylinder inlet ports communicating between said cylinder and a source of air, and an exhaust port through which exhausted gases are expelled from said cylinder;

a piston movably mounted within said cylinder;

a first intake valve cooperating with a first of said inlet ports and selectively movable between a closed position and an open position;

a second intake valve cooperating with a second of said inlet ports and selectively movable between a closed position and an open position;

an exhaust valve cooperating with said exhaust port;

at least one compressor in fluid communication via a conduit between said source of air and at least said first of said inlet ports; and

wherein said first intake valve occupies its said open position only while said second intake valve occupies its closed position.

55. (New) The internal combustion engine of claim 54, further comprising means for directing low pressure air to said second of said inlet ports during an intake stroke of the piston and for directing air highly compressed by said compressor to said first of said inlet ports during a compression stroke of said piston.

56. (New) The internal combustion engine of claim 54, further comprising means for directing low pressure air to one of said inlet ports during an intake stroke of the piston and for directing air highly compressed by said compressor to the other of said inlet ports during a compression stroke of said piston and after compression has begun.

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57. (New) An internal combustion engine, comprising:
an engine block defining at least one cylinder therein, two cylinder inlet ports communicating between said cylinder and a source of air, and an exhaust port through which exhausted gases are expelled through said cylinder;
a piston movably mounted within said cylinder;
a first intake valve cooperating with a first of said inlet ports and selectively movable between a closed position and an open position;
a second intake valve cooperating with a second of said inlet ports and selectively movable between a closed position and an open position;
an exhaust valve cooperating with said exhaust port;
at least one compressor in fluid communication via a conduit between said source of air and at least said first of said inlet ports; and
wherein said first intake valve occupies its said open position only during a compression stroke of said piston.
58. (New) The internal combustion engine of claim 57, further comprising a means for directing low pressure air to said second of said inlet ports during an intake stroke of the piston and for directing air highly compressed by said compressor to said first of said inlet ports during a compression stroke of said piston.
59. (New) The internal combustion engine of claim 57, further comprising a means for directing low pressure air to one of said inlet ports during an intake stroke of the piston and for directing air highly compressed by said compressor to the other of said inlet ports during a compression stroke of said piston and after compression has begun.
60. (New) An internal combustion engine, comprising:
an engine block defining at least one cylinder therein, two cylinder inlet ports communicating between said cylinder and a source of air, and an exhaust port through which exhausted gases are expelled through said cylinder;
a piston movably mounted within said cylinder;

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a first intake valve cooperating with a first of said inlet ports and selectively movable between a closed position and an open position;
a second intake valve cooperating with a second of said inlet ports and selectively movable between a closed position and an open position;
an exhaust valve cooperating with said exhaust port;
at least one compressor in fluid communication via a conduit between said source of air and at least said first of said inlet ports; and
wherein said first intake valve occupies its said open position only after compression has begun during a compression stroke of said piston.

61. (New) The internal combustion engine of claim 60, further comprising a means for directing low pressure air to said second of said inlet ports during an intake stroke of the piston and for directing air highly compressed by said compressor to said first of said inlet ports during a compression stroke of said piston.

62. (New) The internal combustion engine of claim 60, further comprising a means for directing low pressure air to one of said inlet ports during an intake stroke of the piston and for directing air highly compressed by said compressor to the other of said inlet ports during a compression stroke of said piston and after compression has begun.

63. (New) The internal combustion engine of claim 25, further comprising a means for directing low pressure air to one of said inlet ports during an intake stroke of the piston and for directing air highly compressed by said compressor to the other of said inlet ports during a compression stroke of said piston.

64. (New) The internal combustion engine of claim 25, further comprising a means for directing low pressure air to one of said inlet ports during an intake stroke of the piston and for directing air highly compressed by said compressor to the other of said inlet ports during a compression stroke of said piston and after compression has begun.

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APPENDIX B

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The Merriam-Webster Dictionary

HOME AND OFFICE EDITION



Merriam-Webster, Incorporated, Publishers
Springfield, Massachusetts

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A GENUINE MERRIAM-WEBSTER

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Preface

Explanatory Note

Abbreviations Used

Pronunciation Symbols

A Dictionary of

Common English

Foreign Words and

Biographical Names

Geographical Names

Signs and Symbols

A Handbook of Style

Documentation of

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